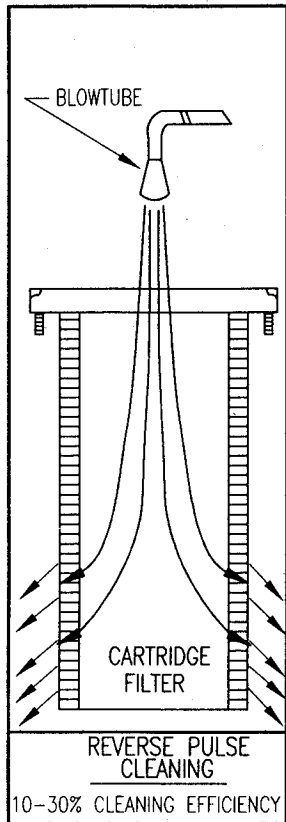
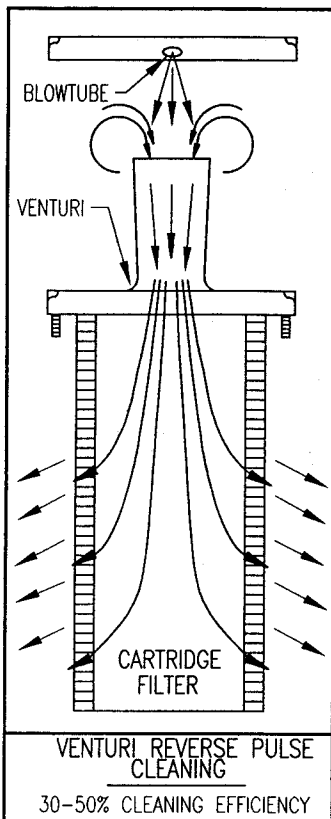


### Cartridge Cleaning Systems



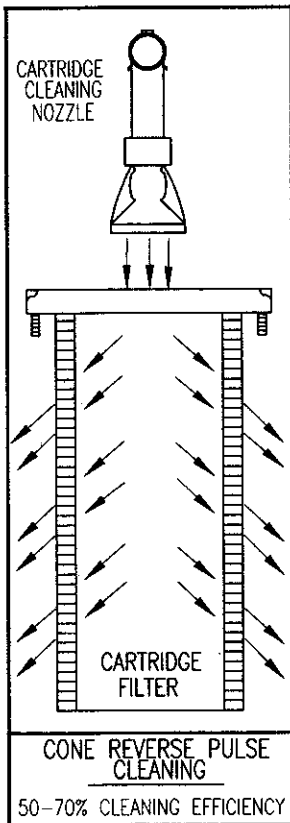
#### Reverse Pulse Cleaning:

Reverse Pulse Cleaning is the quick release of pressure through a blowtube into a cartridge filter. The air impinges against the bottom of the cartridge and deploys in the immediate area. The pressure profile down the wall of the filter varies from negative (low) at the top to positive (high) at the bottom of the filter. The resulting burst of compressed air typically pressurizes the bottom third of the cartridge filter, resulting in only 10-30% actual cleaning effectiveness. Clean, dry, oil free compressed air between 90-110 psi required. The further away the blowtube is located from the cartridge intake, up to 15 inches, the better it usually performs. Any type media can be used, but must be precoated to prevent particulate from embedding into the fibers. This type of cleaning system lends itself to on line or off line pulse cleaning.



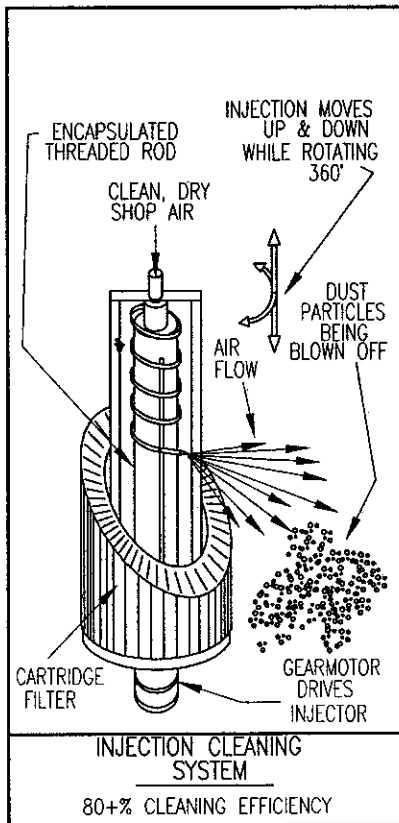
#### Venturi Reverse Pulse Cleaning:

Venturi Reverse Pulse Cleaning is the quick release of pressure through a blowtube into a venturi or enductor tube into a cartridge filter. A higher volume of air is induced via this principle. The resulting burst of compressed air is more equally dispersed across the filter resulting in 30-50% total cleaning effectiveness. Clean, dry, oil free compressed air between 80-100 psi required. The further away the blowtube is located from the cartridge intake, up to 15 inches, the better it usually performs. Venturi should be conical shaped to match filter size and located on the top of the filter. Any media can be used, but must be precoated, to prevent particulate from embedding into the fibers. This type of cleaning system lends itself to on line or off line pulse cleaning.



### Cone Reverse Pulse Cleaning:

Cone Reverse Pulse Cleaning is the quick release of pressure through a cone or nozzle into a cartridge filter. The design alters the pressure profile down the length of the cartridge to give more even distribution of the cleaning air flow. A higher volume of air is also induced. The resulting burst of compressed air typically cleans 50-70% of the filter. Clean, dry, oil free compressed air between 60-80 psi required. The cone location is related to the orifice used. Any media can be used, but must be precoated, to prevent particulate from embedding into the fibers. This type of cleaning system lends itself to on line or off line pulse cleaning. In some applications the cone reverse system can be retrofitted in existing reverse or venturi reverse systems. Consult factory for field retrofit availability.

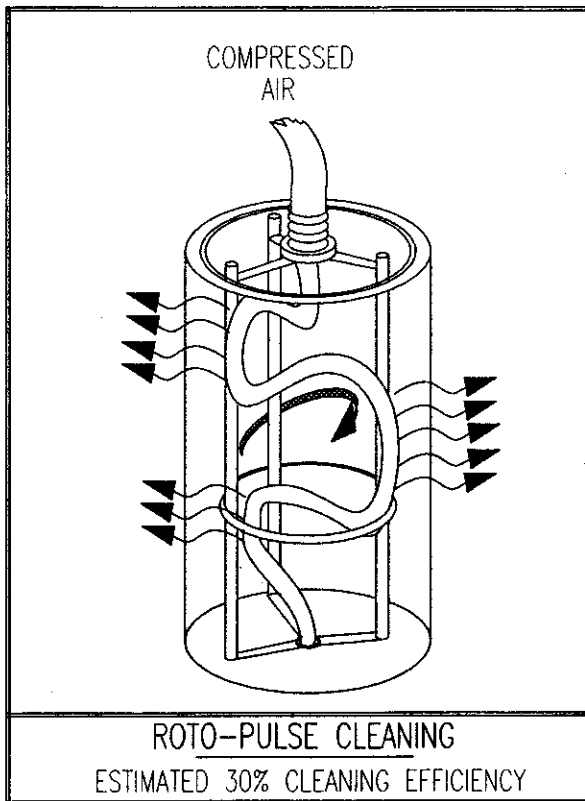


### Injection Cleaning System:

The patented Injection Cleaning System is the continuous release of pressure through a nozzle directed at a section on the inside of the cartridge filter. An encapsulated linear actuator moves the nozzle up and down and a gear motor rotates the ICS 360° covering the cartridge filter in eight minutes. The concentrated air jet is effective at blowing dust particles off the filter. The resulting cleaning cycle typically cleans 80% or more of the filter. Clean, dry, oil free compressed air between 60-80 psi required. The ICS nozzle and distance from filter must be correlated. Any type media can be used, but must be precoated to prevent particulate from embedding into the fibers. This type of cleaning lends itself to off line pulse cleaning.

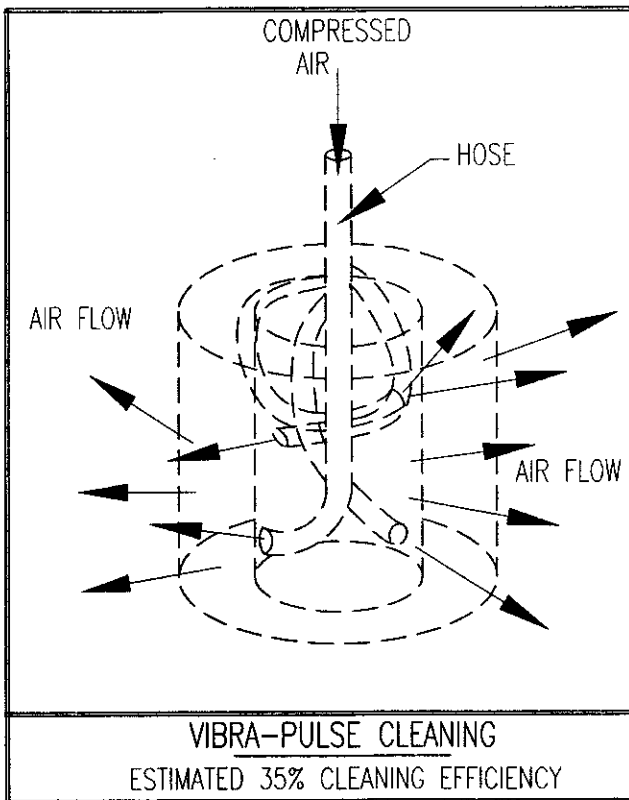
**Generally speaking, the more effective the cleaning system, the higher the air-to-media ratio can be. Low air-to-media ratios are usually required when loading is extremely heavy and on line pulse cleaning is required.**

## Other Cleaning Systems



### Roto-Pulse:

Micro Air's Roto-Pulse incorporates an offset pipe with approximately 14 nozzles attached that twirls inside the cartridge filter. It's their poor knock off of our patented ICS. The air distribution is spread across the surface of the filter requiring approximately 120-140 psi to operate. No initial pressure burst is induced or profile developed due to the amount of nozzle orifice openings. Cleaning efficiency is estimated at 30%.



### Vibra-Pulse:

Air Flow System's Vibra-Pulse incorporates a hose that is inserted in the cartridge filter. The hose, when initiated, randomly whips the clean air side of the filter. The initial air pressure burst is localized. The random movement of the hose causes vibration that aids in dislodging particulate from the cartridge. Compressed air between 80-120 psi is required. No set points or system to completely clean the cartridge filter is incorporated. Cleaning efficiency is estimated at 35%.

- Comments:**
- (1) Lower PSI and more efficient pulsing, increase cartridge filter life.
  - (2) Lower compressed air requirements to end-user result in much lower operating costs.